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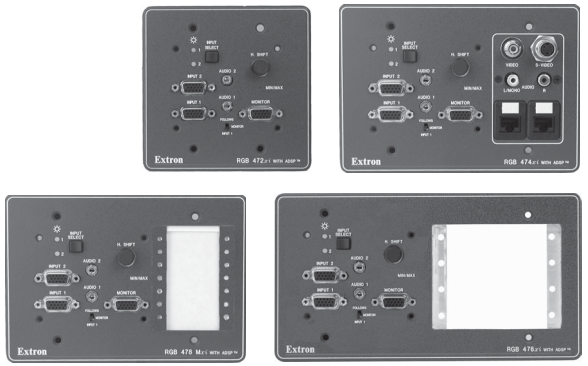
INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual



RGB 472xi, 474xi, 478xi, and 478 Mxi

Wall Box-Mountable Interfaces with Euro Channel versions

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Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterias usadas siguiendo las instrucciones del fabricante.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, USA

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Japan:

Extron Electronics, Japan
Daisan DMJ Bldg. 6F,
3-9-1 Kudan Minami
Chiyoda-ku, Tokyo 102-0074
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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Quick Start Guide — RGB 470*xi* Series

To install and set up an RGB 470*xi* series interface, follow these steps:

Step 1

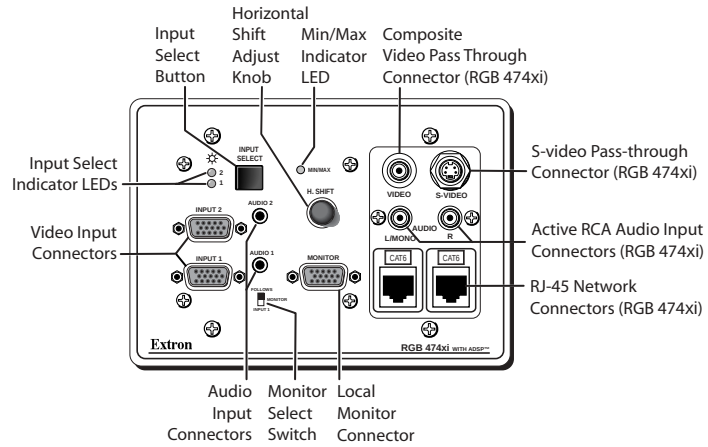
Turn all of the equipment off and disconnect from the power source.

Step 2

If applicable, **prepare the site** (refer to the appropriate Installation Guide for information on your specific situation).

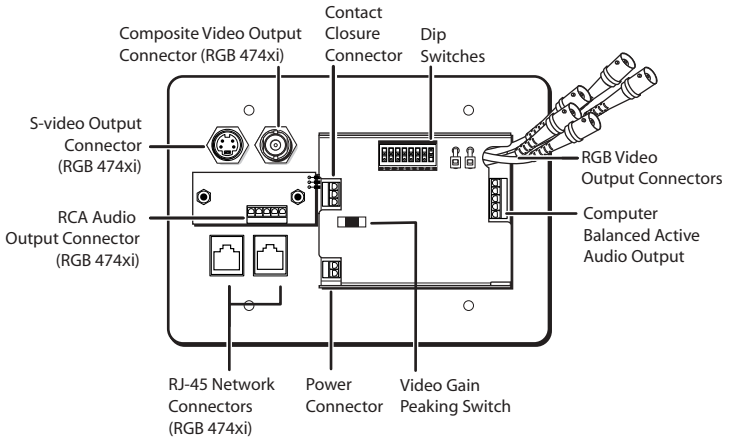
Step 3

Attach the input cables to the front of the interface, as required.



Step 4

Attach the output cables to the back of the interface.


Composite Video Output Connector (RGB 474xi)
Contact Closure Connector
Dip Switches
S-video Output Connector (RGB 474xi)
RGB Video Output Connectors
RCA Audio Output Connector (RGB 474xi)
Computer Balanced Active Audio Output
RJ-45 Network Connectors (RGB 474xi)
Power Connector
Video Gain Peaking Switch

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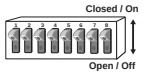
Step 5

Set the rear panel DIP switches.



NOTE *The default for all DIP switches is Off (down).*

1 — Sync on green

On — The interface outputs sync on green.

Off — The interface outputs separate horizontal and vertical sync for RGBHV.

2 — Composite sync

On — The interface outputs combined horizontal and vertical sync for RGBS.

Off — The interface outputs RGBHV.

3 — DDSP (Digital Display Sync Processing)

On — The interface uses DDSP instead of ADSP. DDSP does not process the sync signal and H-shift is disabled.

Off — The interface performs sync processing operations, such as centering, with ADSP.

4 — Serration pulse

On — The interface outputs serration pulses in the vertical sync interval (required by some displays).

Off — The interface does not output serration pulses.

5 — Negative sync — This switch controls sync polarity.

On — Both the horizontal and the vertical sync signals are forced to negative polarity on output.

Off — Output sync polarity follows (is the same as) input polarity.

6— Vertical sync pulse width

On — The vertical sync pulse is narrow.

Off — The vertical sync pulse is wide.

7 — Mono/Stereo mode — This switch controls the audio output of the interface.

On — Mono audio output on the left channel.

Off — Stereo audio output (default).

8 — Autoswitch — This switch controls the autoswitch setting.

On — Autoswitch.

Off — Manual switch.

NOTE *Autoswitch selects the active input and disables manual switching. When both inputs have active signals, the interface will switch to Input #2. When Autoswitch is selected, the input LED flashes 4 times when the input select button is pressed.*

Step 6

Connect power cords and turn on all equipment.

Step 7

The picture should now appear, and sound should be audible. If not, ensure that all devices are plugged in and receiving power. Check the cabling and the DIP switch settings, and make adjustments as needed.

Step 8

Disconnect power from all equipment. Cut off power to the interface at the source and leave the connector plugged into the back of the interface.

Step 9

Mount the interface into the electrical box.

Step 10

Restore power to the equipment.

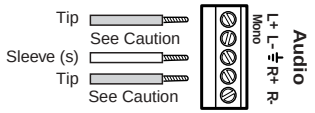
Optimizing the Video and Audio

Video — Use the 3-position Video Gain Peaking Switch on the rear panel to compensate for cable resistance and capacitance. Select the setting that yields the best picture.

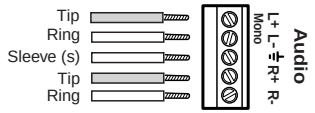
Use the Horizontal Shift Adjust Knob on the front panel to center the picture on the screen.

Audio — For optimum audio performance, especially on long cable runs, wire the audio connector for balanced audio.

Unbalanced Output



Balanced Output



CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

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Chapter One

Introduction

About this Manual

About the RGB 470*xi* Series of Interfaces

Features

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About this Manual

This manual contains information about the Extron RGB 470*xi* series of universal wall, furniture and floorbox mountable interfaces, and on how to configure and operate them. Unless otherwise noted, "interface" will be used to refer to all models interchangeably.

For information on installing the wall box-mountable versions of these interfaces, refer to one of the available installation guides. For wall or furniture mount installations (and EC versions), refer to #68-636-03. For Steel City® floorbox installations, refer to #68-636-01. For FSR floorbox installations, refer to #68-636-05.

About the RGB 470*xi* Series of Interfaces

The Extron RGB 472*xi* (all), RGB 474*xi*, RGB 478*xi*, and RGB 478 M*xi* are compact, wall box-, or floor box-mountable computer video interfaces. Each interface comes in either a two-gang (RGB 472*xi*), three-gang (RGB 474*xi* and RGB 478 M*xi*), or four-gang (RGB 478*xi*) wall box size, except floorbox models. Optionally, the two- and four-gang interfaces (except Steel City and FSR models) come in an EC version which mounts in a European style wall channel. The interfaces (except Steel City and FSR models) are also wall/furniture-mountable and come with a matching mud ring kit (part #70-086-xx). The RGB 474*xi* provides an active stereo/mono, unbalanced to balanced stereo audio driver and an RJ-45 connector for network, data, and telephone transmissions. The interfaces have a 300 MHz (-3dB) video bandwidth.

Each interface accepts two 15-pin HD computer-video inputs and two stereo audio inputs. All models include a 15-pin HD buffered local monitor output.

Features

Horizontal shifting control — The displayed image may be shifted to the left or right by turning a front panel knob.

Advanced Digital Sync Processing™ (ADSP™) — ADSP allows sync processing operations, such as horizontal centering, to occur without affecting the signal's sync timing. This allows horizontal centering to be applied to signals that are output to digital display devices such as LCD projectors and plasma displays. A rear panel DIP switch provides another option, Digital Display Sync Processing™ (DDSP™), to ensure proper displays without altering sync pulse timing or width.

Stereo audio — Unbalanced stereo audio inputs can be output as balanced or unbalanced, unamplified stereo or mono.

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Chapter Two

Operation

Installation Overview

UL Requirements

Interface Details

Application Diagram Examples

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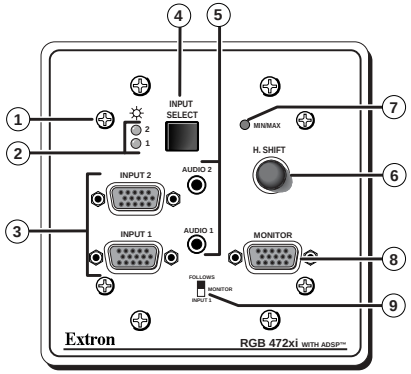
UL Requirements

The following Underwriters Laboratories (UL) requirements pertain to the installation of the RGB 470*xi* series of interfaces into a wall or furniture.

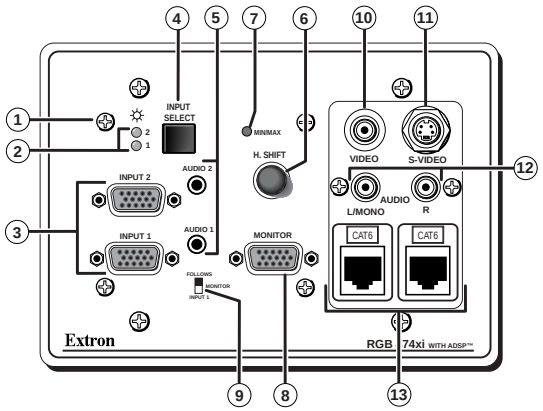
1. These units are not to be connected to a centralized DC power source or used beyond their rated voltage range.
2. These units must be installed in UL listed junction boxes.
3. These units must be installed with conduit in accordance with the National Electrical Code.

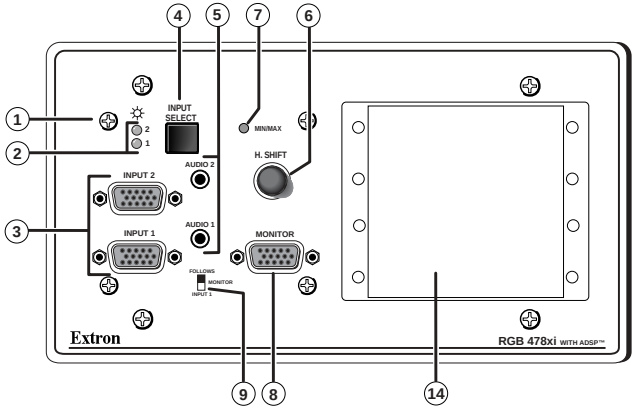
Interface Details

Front panel features and cabling



NOTE *The RGB 478 M*xi *(not pictured) is functionally identical to the RGB 478*xi *below, except it fits in a 3-gang box and accepts four mini AAPs (MAAPs).*





(1) **Faceplate screws** — These screws secure the faceplate to the rest of the interface.

NOTE *Do not remove these faceplate screws while the interface is attached to the wall or the detached interface may fall down inside the wall.*

(2) **Power/signal LED (Inputs 1 and 2)** — These LEDs light

- red (initially) to indicate that the interface is receiving power.
- as indicated by the table below, if an active sync signal is present at the input indicated, and the interface is receiving power.

Input Selected	Input 1 Signal	Input 2 Signal	LED 1	LED 2
Input 1	Not Present	Not Present	Red	Off
Input 2	Not Present	Not Present	Off	Red
Input 1	Present	Not Present	Green	Off
Input 2	Present	Not Present	Amber	Red
Input 1	Not Present	Present	Red	Amber
Input 2	Not Present	Present	Off	Green
Input 1	Present	Present	Green	Amber
Input 2	Present	Present	Amber	Green

(3) **Video input connectors (1 and 2)** — Plug a male 15-pin HD connector from the video source into one of these two connectors.

(4) **Input select switch** — Use this switch to an select the input signal.

NOTE *Autoswitch setting of the dip switch disables this control.*

(5) **Audio input connectors (1 and 2)** — Plug a 3.5 mm plug into one of these jacks for unbalanced audio input. Wire the male plug as shown on the next page.

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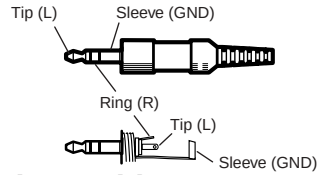


Audio input wiring

⑥ **Horizontal shift control knob (H. Shift)** — While viewing the displayed image, rotate this control to move the image to the right or left on the screen. The Min/Max LED (⑦) will flash red whenever the minimum or maximum limit of this control is reached.

NOTE *DDSP setting of the dip switch disables the horizontal shifting control.*

⑦ **Min/Max LED** — This LED blinks whenever the minimum or maximum limits of the horizontal shift control (⑥) have been reached. Continually turning the horizontal shift control knob in the same direction after the limit has been reached will cause the LED to continually blink.

⑧ **Buffered local monitor output connector** — Attach a cable from a local monitor to this female 15-pin HD connector.

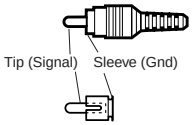
⑨ **Monitor switch** — Use switch to select which input signal to monitor:

- Follows (up) — monitor displays the signal fron the selected input.
- Input 1 (down) — locks the monitor to the signal from Input 1.

⑩ **Composite video connector (RGB 474*xi*)** — This female RCA type connector provides pass-through capability to a rear panel BNC for composite video input.

⑪ **S-video pass-through connector (RGB 474*xi*)** — Connect an S-video source to this 4-pin mini DIN pass-through connector.

⑫ **RCA audio connectors (RGB 474*xi*)** — Connect the left audio signal cable to the white RCA connector (L/Mono), and the right audio signal cable to the red RCA connector (R) for unbalanced stereo audio. Wire the RCA plugs as shown at left.



NOTE *When a mono audio signal is applied to the L/Mono input, the same signal will be output to both left and right audio outputs.*

⑬ **Network connectors (RGB 474*xi*)** — Connect a computer to this RJ-45 female connector for pass-through to a network.

⑭ **Opening for Architectural Adapter Plates** — The RGB 478*xi* can accept up to four optional standard architectural adapter plates (AAPs) attached here. The RGB 478 M*xi* (not pictured) can accept up to four optional mini architectural adapter plates (MAAPs) attached here. The adapter plates come with a variety of audio/video connectors.

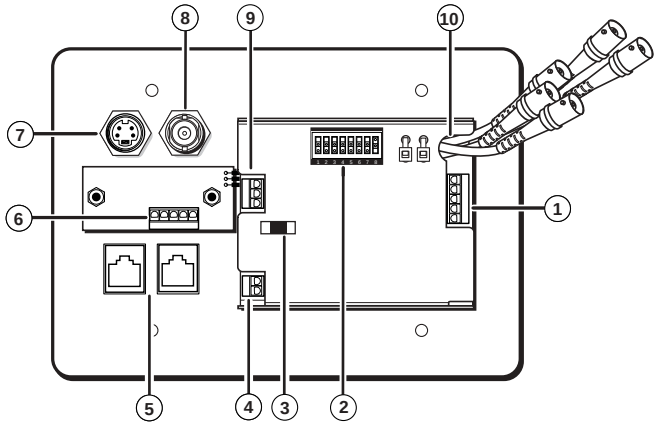
Blank plates (two single-space and one double-space) are included with the interfaces to cover unused spaces. Adapter plates must be ordered separately (see "Optional Adapter Plates" in appendix A). They must also be attached to the faceplate and cabled before the interface is installed in the wall or furniture. The screws needed for installing the adapter plates are supplied (MAAPs), or built into the plates (AAPs), so no additional screws will be needed.

Euro Channel versions

The RGB 472*xi*, and RGB 478*xi* are available in a Euro Channel (EC) version and the RGB 472*xi* is also available in two floorbox models (MK and FSR) (see appendix A for part numbers).

The front and rear panel features, cabling requirements, and testing/troubleshooting procedures are identical to the descriptions shown in this chapter for the wall box models. For installation instructions, see the RGB 470xi Series installation guide that addresses your specific requirements.

Rear panel features and cabling



Rear panel of the RGB 474*xi* interface

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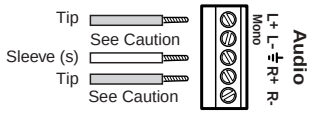
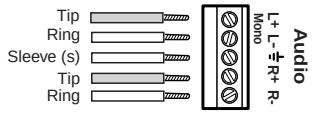
① **Audio output connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole one-piece captive screw connector for unbalanced or balanced audio output. Wire the connector as shown here.

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

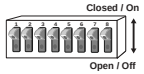
Unbalanced Output



Balanced Output



② **DIP switches** — This bank of DIP switches, as illustrated below, controls sync on green output, composite sync output, DDSP (Digital Display Sync Processing), serration pulse output, vertical sync pulse width, and other interface functions. Moving a switch up will set it to "On" and moving it down will set it to "Off".



NOTE The default for all DIP switches is Off (down).

1 — Sync on green

On — The interface outputs sync on green (RBsB).

Off — The interface outputs separate horizontal and vertical sync (on the H and V connectors) for RGBHV.

2 — Composite sync — Controls composite sync output.

On — The interface outputs combined horizontal and vertical sync for RGBS.

Off — The interface outputs RGBHV or RGsB video.

3 — DDSP (Digital Display Sync Processing)
This feature may be necessary for digital display devices such as LCD, DLP (digital light processing) and plasma displays. Use this option if the image is not displayed properly after other options, such as serration pulse and vertical sync pulse width, have been explored.

On — The interface uses DDSP instead of ADSP. DDSP does not process the sync signal.

NOTE *DDSP disables the horizontal shifting control.*

Off — The interface performs sync processing operations, such as centering, with ADSP.

4 — Serration pulse — Many LCD and DLP projectors and plasma displays, must have serration pulses removed from the sync signal in order to be displayed properly. Flagging or bending at the top of the video image is a sign that the serration pulses should be removed.

On — The interface outputs serration pulses in the vertical sync interval.

Off — The interface does not output serration pulses.

5 — Negative sync — This switch controls sync polarity.

On — Both the horizontal and the vertical sync signals are forced to negative polarity on output.

Off — Output sync polarity follows (is the same as) input polarity.

6 — Vertical sync pulse width — For some digital display devices, if no picture appears, the picture cuts in and out, or it is scrambled, try adjusting the output vertical sync pulse width or switching from ADSP to DDSP.

On — The vertical sync pulse is narrow.

Off — The vertical sync pulse is wide.

7 — Mono/Stereo mode — This switch controls the audio output of the interface.

On — Mono audio output on the left channel.

Off — Stereo audio output (default).

8 — Autoswitch — This switch controls the autoswitch setting.

On — Autoswitch.

Off — Manual switch.

NOTE *In Autoswitch mode, the input with an active signal is selected. When both inputs have active signals, the interface will switch to Input #2. Autoswitch disables manual selection of inputs.*

③ **Gain switch** — To compensate for cable resistance and capacitance, slide this switch to select the level of video gain that yields the sharpest picture.

Normal (inside position) — unity gain (no signal boost)

Medium (middle position) — mid-level peaking and gain

Maximum (outside position) — maximum amount of peaking and gain — Select this for use with longer cables.

NOTE *If the signal cable between the interface and the output device is shorter than approximately 125 feet, and the gain switch is set to Medium or Maximum, the image*

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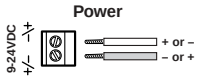
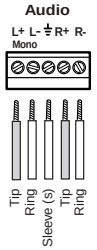
may be overcompensated. If the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, try changing the gain/ peaking setting.
Adjust the gain before installing the interface into a wall or furniture, as the gain switch will be inaccessible after installation.

④ **Power connector** — Connect a 9VDC to 24VDC power supply to this 3.5 mm, 2-pole one-piece captive screw connector. Wire the connector as shown here. Polarity is not important.



⑤ **Network pass-through RJ-45 connectors (2) (RGB 474*xi*)** — If these connectors are not required, blank covers are supplied to fill the faceplate openings.

⑥ **Balanced active audio connector (RGB 474*xi*)** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole direct insertion captive screw connector for balanced active audio output. Wire the connector as shown at right.



⑦ **S-video pass-through 4-pin mini DIN connector (RGB 474*xi*)** — A male 4-pin mini DIN connector attaches here.

⑧ **Composite video pass-through female BNC connector (RGB 474*xi*)** — A male BNC connector attaches here.

⑨ **Contact Closure connector** — Insert wires into and tighten the screws on this 3.5 mm, 3-pole direct-insertion captive screw connector for contact closure control. To select input 1 or 2, the respective wire is shorted to ground.

⑩ **RGB video output connectors** — Attach coaxial cables from the interface to the display device via these female BNC connectors. These BNCs are on red, green, blue, black, and yellow pigtail wires secured to the interface by the tie wraps.

For **RGBHV** output: **R** is red, **G** is green, **B** is blue, **H** is black, and **V** is yellow.

For **RGBS** output: **R** is red, **G** is green, **B** is blue, and **S** is black.

For **RGsB** output: **R** is red, **G** is green with sync, and **B** is blue.

Pre-installation testing/troubleshooting

Before installing the interface into the wall or furniture, test the system to verify that the connections and settings are correct.

Apply power to the interface. The power/signal LEDs on the interface will light red (initially) to indicate that the interface is receiving power.

If the LED does not light, check the wiring at both the interface and the power supply, and ensure that the power supply is connected to a power source.

If the image does not appear or there is no sound

1. Make sure that all the devices are powered on.
2. Ensure that the connectors are wired correctly at both ends of the cables. Audio cables must be wired for an unbalanced stereo input signal and for a balanced or an unbalanced stereo output signal.
3. If input is from a laptop computer and no picture appears, use a laptop breakout cable for the input connection. Check the computer's user's guide or contact Extron to determine if special commands are required to output video to the external video port. Also, many laptops' screens shut off after the external video port is activated.
4. Call the Extron S³ Sales and Technical Support Hotline if the image still does not appear or there is no sound.

If the image is not displayed correctly

1. If the picture is too bright or dark, or if the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, change the gain setting.
2. If the picture appears and is stable, but it has ghosting or blooming, verify that the video input is properly terminated. If the problem is not resolved by changing the termination, try using a different input cable. Poor quality or damaged cable can cause ghosting or blooming.
3. If the picture still is not displayed correctly, call the Extron S3 Sales and Technical Support Hotline.

If the interface does not respond to horizontal shifting

If the picture does not move on screen when the horizontal shift control knob is rotated, DDSP is in use. Set the DDSP DIP switch to Off.

Once the system has been cabled and tested, the interface can be installed in a wall, furniture, a floor box, or Euro Channel. Refer to the RGB 400*xi* Series Installation Guide that addresses your specific requirements.

If optional AAP devices are being installed (RGB 478*xi* and RGB 478 M*xi* only), see the following section "Mounting the optional AAP or MAAP devices."

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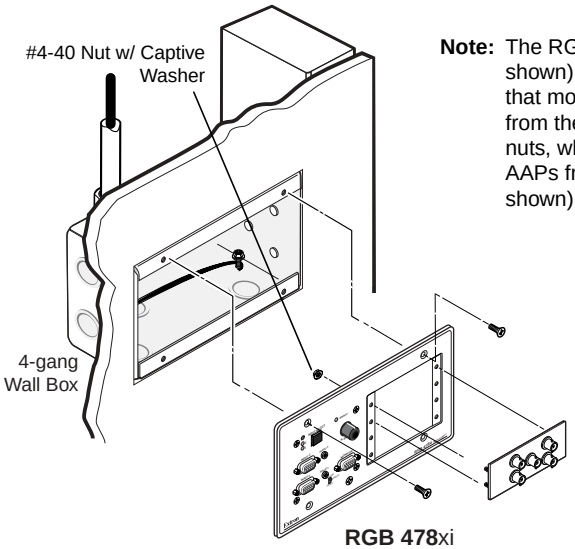
Mounting the optional AAP or MAAP devices

The interface and any optional architectural adapter plates (standard or mini) must be cabled before the interface is installed in a wall or furniture. The screws needed for installing the optional standard AAP devices are built into its front panel, and hex screws are provided with the MAAP devices, so no additional screws will be needed.

1. Before any cables are attached to the front of an AAP device, secure the optional AAP devices to the faceplate with the provided captive washers and #4-40 nuts (standard AAPs), or the 3/32" hex screws (MAAPs).



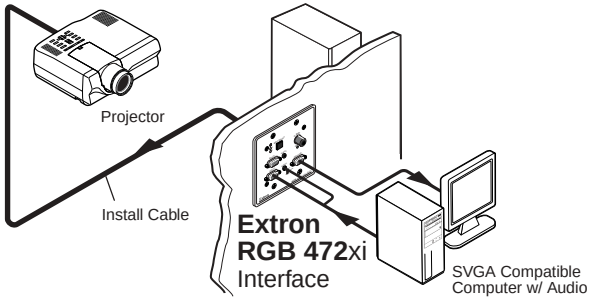
RGB 478xi

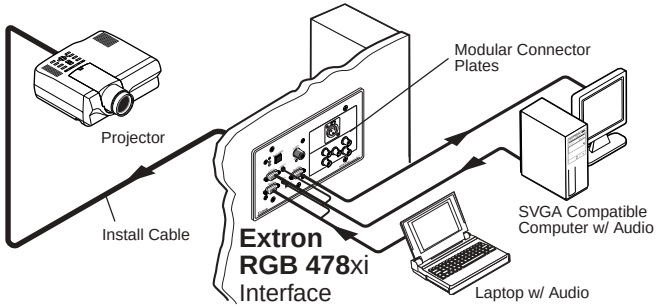
Note: The RGB 478 Mxi (not shown) uses hex screws that mount the MAAPs from the front, instead of nuts, which mount the AAPs from the rear (as shown).

Mounting the optional AAP device (standard AAP device shown)

2. Attach the adapter plates to the faceplate with the provided hex screws (MAAPs), or captive washers and #4-40 nuts (AAPs).
3. Attach the output cables to the rear connectors of the adapter plates. Soldering will be required for some connectors. Attach foil and braided shields to ground connections.
4. Install the interface into the wall box (refer to the *RGB 400 Series Installation Guide*).

Application Examples





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Appendix A

Specifications and Parts

Specifications

Included Parts

Accessories

Cables

Optional Adapter Plates

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These specifications apply to all models unless otherwise noted.

Specifications

Video

Routing	2 x 1 router
Gain	Unity (0.7V), 15% with 3dB peaking (0.8V), 30% with 6dB peaking (0.9V)
Bandwidth	300 MHz (-3dB)

Video input and loop through

Number/signal type	2 analog RGBHV, RGBS, RGsB
Connectors	*(2)* 15-pin HD female buffered input and (1) 15-pin HD female local monitor loop through
Nominal level	0.7V p-p for RGB
Minimum/maximum levels	Analog: 0.3V to 1.45V p-p with no offset at unity gain
Impedance	75 ohms, buffered
Horizontal frequency	15 kHz to 150 kHz (optimum 15 kHz to 62 kHz)
Vertical frequency	30 Hz to 170 Hz
Return loss	<-30dB @ 5 MHz

Video output

Number/signal type	2 identical analog RGBHV, RGBS, RGsB
Connectors	5 BNC female on 2" to 2.5" cables (1) 15-pin HD female
Nominal level	0.7V p-p for RGB
Minimum/maximum levels	Analog: 0.7V to 0.9V p-p (switch selectable) w/peaking and 0.7V p-p input
Impedance	75 ohms
Return loss	<-30dB @ 5 MHz

Sync

Input type	RGBHV, RGBS, RGsB (accepts RGsB, but does not strip sync from video)
Output type	RGBHV ..... at all times RGBS ..... switch selectable RGsB ..... switch selectable
Input level	2.0V to 5.5V p-p with ±0.2VDC offset max.
Output level	4.0V to 5.0V p-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max propagation delay	52 ns
Max rise/fall time	2.5 ns
Polarity	Positive or negative (follows input), or negative (DIP switch selectable)

Audio

Routing	2 x 1 router
Gain	Unbalanced 0dB, balanced +6dB
Response	20 Hz to 20 kHz, ±0.5dB
THD + Noise	0.03% @1 kHz, 0.3% @ 20 kHz at nominal level
S/N	<-90dB at rated maximum output (14dBu), balanced
Stereo channel separation	>90dB @ 1 kHz to 20 kHz

Audio input

Number/signal type	2 PC level stereo, unbalanced
Connectors	(2) 3.5 mm stereo female jacks (2 channel), unbalanced; tip (L), ring (R), sleeve (ground)
Impedance	>5 kohms unbalanced, DC coupled
Nominal level	-10dBV (316mVrms)
Maximum level	+8.5dBu at 1% THD+N

Audio output

Number/signal type	1 buffered, stereo or mono, balanced
RGB 474$\mathcal{xi}$(only)	2 buffered, stereo or mono, balanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
RGB 474$\mathcal{xi}$(only)	(2) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (600 ohm)	+14dBm, balanced at stated %THD+N

NOTE *0dBu = 0.775 volts (RMS).*

General

Power	100VAC to 240VAC, 50/60 Hz, 5 watts, external, autoswitchable; to a 9 to 24VDC, 0.20 A power supply. Product requires 0.2 A (minimum). (A 12VDC, 1 A power supply is included.)

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Temperature/humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non condensing Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non condensing
Rack mount	No
RGB 472/474/478*xi* SC-AFM models	Steel City AFM floor box mountable
RGB 472*xi* FSR models	FSR floor box mountable
All other models	Wall or furniture mountable
Enclosure type	Metal
Enclosure dimensions	
RGB 472*xi* faceplate	4.5″ H x 4.6″ W x 0.1" D (2 gang) (11.4 cm H x 11.7 cm W x 0.3 cm D)
RGB 474*xi*, 478 M*xi* faceplate	4.5″ H x 6.4″ W x 0.1" D (3 gang) (11.4 cm H x 16.3 cm W x 0.3 cm D)
RGB 478*xi* faceplate	4.5″ H x 8.3″ W x 0.1" D (4 gang) (11.4 cm H x 21.2 cm W x 0.3 cm D)
RGB 472*xi* EC faceplate	3.2" H x 4.4" W x 0.1" D (8.0 cm H x 11.2 cm W x 0.3 cm D)
RGB 478*xi* EC faceplate	3.2" H x 7.7" W x 0.1" D (8.0 cm H x 19.5 cm W x 0.3 cm D)
RGB 472*xi* FSR faceplate	4.5" H x 3.6" W x 0.1" D (11.4 cm H x 9.1 cm W x 0.3 cm D)
RGB 472*xi* SC-AFM2 faceplate	2.9" H x 3.5" W x 0.1″ D (7.4 cm H x 8.9 cm W x 0.3 cm D)
RGB 472*xi* SC-AFM4 faceplate	2.9" H x 5.8" W x 0.1″ D (7.4 cm H x 14.7 cm W x 0.3 cm D)
RGB 474*xi* SC-AFM6, RGB 478*xi* SC-AFM6 faceplate	2.9" H x 8.9" W x 0.1″ D (7.4 cm H x 22.6 cm W x 0.3 cm D)
Interface enclosure for all models	2.7" H x 3.3" W x 1.2" D (6.9 cm H x 8.4 cm W x 2.5 cm D) (Depth excludes front panel connectors and controls.)
Product weight	
RGB 472*xi* SC-AFM2	0.5 lbs (0.3 kg)
RGB 472*xi* SC-AFM4, RGB 474*xi* SC-AFM6, RGB 478*xi* SC-AFM6	0.8 lbs (0.4 kg)
RGB 472*xi*, RGB 472*xi FSR*	0.5 lbs (0.2 kg)
RGB 474*xi*	0.6 lbs (0.3 kg)
RGB 478*xi*, RGB 478 M*xi*	0.7 lbs (0.3 kg)
EC models	0.7 lbs (0.3 kg)
Shipping weight (all models)	3 lbs (1.4 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

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Included Parts

These items are included in each order for an RGB 470*xi* series interface:

Included parts	Part number
RGB 472*xi* (grey, black, white)	60-515-01, -02, -03
or RGB 472*xi* EC (white faceplates)	60-515-10
or RGB 474*xi* (grey, black, white)	60-519-01, -02, -03
or RGB 478*xi* (grey, white, black)	60-521-01, -02, -03
or RGB 478*xi* EC (white)	60-521-10
or RGB 478 M*xi* (black and white)	60-592-02, -03
& 2-gang mud ring kit	70-086-01, -11, -21
or 3-gang mud ring kit	70-086-02, -12, -22
or 4-gang mud ring kit	70-086-03, -13, -23
& 12VDC, .42A external power supply kit	70-159-01
& RGB 470*xi* Series User's Manual	
& RGB 400*xi* Series Installation Guide	

NOTE *For SC and FSR part numbers, refer to the installation guide for the appropriate product.*

Accessories

Wall/Junction box	Part number
2-gang J-box, 2.5" deep	980083
3-gang J-box, 2.5" deep	980084
4-gang J-box, 2.5" deep	980097

Audio connector	Part number
3.5 mm stereo plug	10-306-01

Cables

Male-to-male VGA cables	Part number
VGA M6' MHR	26-238-01
VGA M3' MHRA (with audio)	26-490-01
VGA M6' MHRA (with audio)	26-490-02
VGA M12' MHRA (with audio)	26-490-03

Male-to-male 90° VGA cables	Part number
VGAM 90 MHRA 6' (with audio)	26-510-02

Laptop breakout cables	Part number
Mac 15-pin HD F adapter cable kit w/audio	70-156-01
13W3 15-pin HD F adapter cable kit w/audio	70-157-01

High-resolution cables	Part number
BNC-5-3'HR	26-260-15
BNC-5-6'HR	26-260-01
BNC-5-12'HR	26-260-02
BNC-5-25'HR	26-260-03
BNC-5-50'HR	26-260-04
BNC-5-75'HR	26-260-16
BNC-5-100'HR	26-260-05
BNC-5-3'HRP (plenum)	26-378-01
BNC-5-6'HRP (plenum)	26-378-02
BNC-5-12'HRP (plenum)	26-378-03
BNC-5-25'HRP (plenum)	26-378-04
BNC-5-50'HRP (plenum)	26-378-05
BNC-5-75'HRP (plenum)	26-378-06
BNC-5-100'HRP (plenum)	26-378-07
Bulk installation cable (14-conductor, non-plenum), 500' HR	22-120-02
Bulk installation cable (17-conductor, plenum), 500' HR	22-111-03

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Optional Adapter Plates

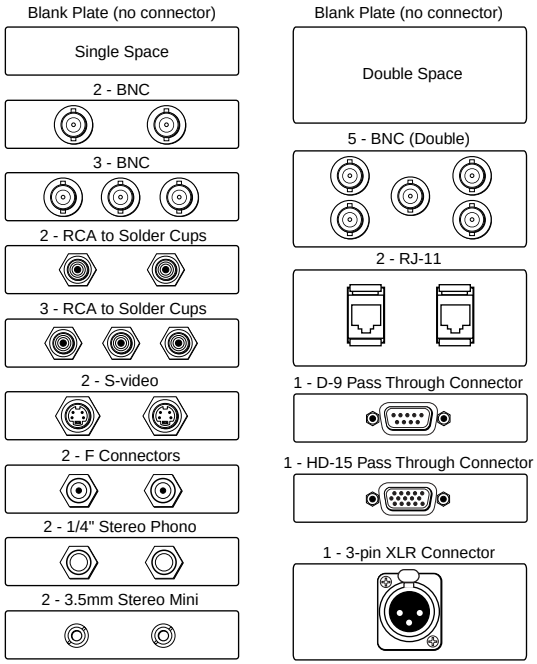
A variety of optional adapter plates for pass-through connections may be ordered for the RGB 478*xi* and RGB 478 M*xi* interfaces.

The RGB 478*xi* can have up to 4 adapter plates installed, and the RGB 478 M*xi* can have up to 4 mini adapter plates installed.

The following configurations of adapters could be installed in an RGB 478*xi* or an RGB 478 M*xi* (mini adapter plates):

- four adapter plates with a "plate size" of one,
- two adapter plates with a plate size of one and one adapter plate with a plate size of two,
- or two adapter plates of plate size two.

Refer to the current Extron catalog for a complete listing of standard and mini AAPs.


Blank Plate (no connector)
Single Space
2 - BNC
3 - BNC
2 - RCA to Solder Cups
3 - RCA to Solder Cups
2 - S-video
2 - F Connectors
2 - 1/4" Stereo Phono
2 - 3.5mm Stereo Mini
Blank Plate (no connector)
Double Space
5 - BNC (Double)
2 - RJ-11
1 - D-9 Pass Through Connector
1 - HD-15 Pass Through Connector
1 - 3-pin XLR Connector

Architectural adapter plates (examples)

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